

**Before the
Federal Communications Commission
Washington, D. C. 20554**

In the Matter of:

The Development of Operational,)	
Technical and Spectrum Requirements)	
For Meeting Federal, State and Local)	
Public Safety Agency Communications)	WT Docket No. 96-86
Requirements through the Year 2010)	
)	

**Reply Comments of EADS Public Safety Inc. to the Seventh Notice of
Proposed Rule Making**

EADS Public Safety Inc. (“EADS”) offers these reply comments to the Seventh Notice of Proposed Rulemaking, *The Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communications Requirements through the Year 2010* (“Seventh NPRM”).¹ EADS supports the Commission’s stated goals of increased competition, interoperability and increased efficiency. These reply comments reflect the vision of EADS for Commission actions that will further those goals, particularly with regard to emerging technologies in the public safety and commercial arenas. With these goals in mind, EADS first cautions that adoption of SAM as an interoperability standard in all radios designed for wideband data channels as part of this current proceeding could thwart the Commission’s goal of increased competition. Second, consistent with the industry standards organizations and the comments of M/A-COM, EADS urges the Commission adoption of modified ACP rules for

¹ WT Docket No. 96-86, FCC 05-9, 20 FCC Rcd. 831, 845-61 (2005)

narrowband channel plans in accordance with prior joint EADS TELECOM North America/Nortel Networks comments.

EADS, through its public safety solutions unit, is a leading worldwide provider of secure digital radio networks with more than 80 networks in 30 countries, including 15 nationwide networks. EADS has provided solutions in Mexico, US and Canada. EADS North America, with ten operating units and investments in 39 cities, offers a broad array of advanced solutions to its customers in the public safety and homeland security, commercial, aerospace and defense markets. EADS North America supports more than 100,000 North American jobs. EADS is a global leader in aerospace, defense and related services.

1 Adoption of SAM as an interoperability standard for wideband data channels

1.1 Background

EADS has participated significantly in the development process of the two wideband data standards currently published by the Telecommunications Industry Association (TIA)². High levels of spectral efficiency can be expected through adherence to these standards with anticipated bit rates for payload of 604.8 kbit/s and 814.8 kbit/s, respectively for SAM and IOTA in a 150 kHz channel.

1.2 Broad application of requirements for interoperability may be premature

Several commenters have emphasized that a physical layer mandate may not fully address the interoperability needs of public safety users and that a “one size fits all” approach may not be

² TIA-902 series of wideband data standards featuring Scaleable Advanced Modulation (SAM) and Isotropic Orthogonal Transform Algorithm (IOTA). TIA-902.BAAB (SAM) was chosen by the FCC for the 700 MHz wideband interoperability channels interoperability standard.

appropriate to meet a wide variety of user requirements.³ EADS agrees with these comments. EADS further highlights that the Commission has already taken the necessary steps to achieve basic interoperability in the 700 MHz narrowband (12.5 kHz) channels by previously mandating Project 25 as a narrowband interoperability standard.⁴ The Project 25 standard includes voice and data transmission (even if at modest rates), and thus satisfies the basic application level requirement of voice and text message transmission. As a result of previous Commission rulings, this narrowband service can currently be made available to all public safety organizations on a broad basis by multiple vendors.

For wideband data interoperability, EADS supports multiple 700 MHz wideband physical layer implementations. EADS encourages further application layers research, both in the user and manufacturer communities, before creation of a 700 MHz wideband channel interoperability rule which would apply to all 700 MHz wideband capable radios.⁵

1.3 Current lack of conformance standards for broadband interoperability threatens competition

Interoperability can only be implemented when a solid conformance standard suite exists. The current status of SAM standardization does not provide this stable starting point to implement interoperability. For example, the TIA-102 Project 25 standards suite includes a conformance standard for testing conformance of Project 25 devices against standard criteria, especially in conventional mode. Despite a significantly higher level of complexity than the current set of Project 25 narrowband interoperability

³ See e.g. Comments of the City of Sacramento, filed 5/27/05, the Department of Public Safety, State of Arizona, filed 5/27/05, the New York State Office for Technology Statewide Wireless Network, filed 5/31/05.

⁴ TIA Series 102 standards

⁵ Radios operating in the general use channels are also required to operate on the interoperability channels utilizing TIA-902 SAM standards

standards, no conformance documentation currently exists, either in draft or concept at TIA. Given the complexity of the broadband standard, development of conformance documentation will inevitably take considerable time. EADS projects that the ability to test for interoperability through standards conformance remains several years in the future. EADS remains committed to working to completion of such conformance documentation.

2 Narrowband technical requirements

2.1 The Commission should modify the ACP requirements for 6.25 kHz, 12.5 kHz, and 25 kHz channels

EADS continues to support the changes to Adjacent Channel Power ("ACP") as originally recommended by EADS TELECOM North America and Nortel Networks.⁶ EADS notes that that M/A-COM also supports modification the ACP rules.⁷ EADS, Nortel, and M/A-COM agree that the modified requirements allow use of more spectrally efficient technologies and do not increase adjacent channel interference potential.

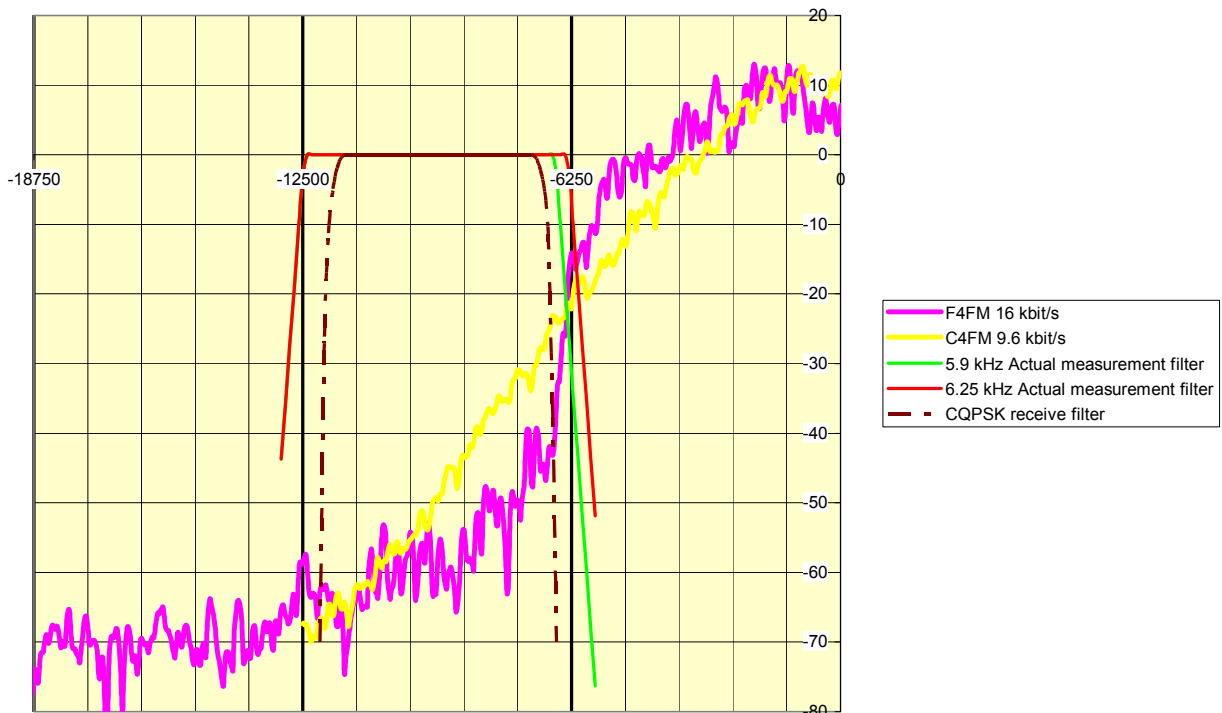
It should be emphasized that in the designated standards industry forum for consideration of such matters a majority voted in favor of adopting the proposed EADS/Nortel Networks modified ACP requirements.⁸

⁶ See "Joint Comments of Nortel Networks Inc. and EADS Telecom North America to Sixth Notice of Proposed Rule Making," WT Docket No. 96-86 (filed Dec. 9, 2002) and Seventh NPRM, Federal Register / Vol. 70, No. 80 / Wednesday, April 27, 2005 / Proposed Rules, 1(d) and 9, ¶ 3, pp 21726-21728. EADS Public Safety Inc. has the same business and policy interests of EADS TELECOM North America in this proceeding.

⁷ See "COMMENTS OF M/A-COM, INC., ON THE SEVENTH NOTICE OF PROPOSED RULEMAKING," WT Docket No. 96-86 (filed Mar. 31, 2005).

⁸ The record of TIA Engineering Subcommittee TR-8.6, Equipment Performance Recommendations, shows that a majority of TIA members (7) voted in favor of adopting the modified ACP requirements urged by Nortel, EADS, and M/A-COM in this proceeding. Four members voted against and two abstained. Motorola states in its comments, "The relaxation sought by Nortel/EADS was considered by the TIA and rejected by a majority of the participants because it reduces adjacent channel protection." (page 9 of Motorola comments). See TIA document No. TR8.6-01-10-0032.pdf, available from the TIA. Despite the record vote in favor, TIA did not move the proposal forward.

The following plot illustrates how a highly efficient (16 kb/s) TDMA proposal in TIA occupies the 700 MHz channel and compares that to the current Project 25 C4FM standard (9.6 kb/s).



The plot clearly shows that a more spectrally efficient 2-Slot TDMA solution at 16 kb/s in a 12.5 kHz channel provides less interference into the adjacent channel than current Project 25 C4FM at the FCC minimum standard of 9.6 kb/s in a 12.5 kHz channel. TDMA implementations may fill the channel near the edge of the adjacent channel, but quickly falls off, and by mid channel on the adjacent channel produces much less interference than the current Project 25 C4FM standard.

Additionally, referring to the figure, EADS demonstrates the present CFR 90.543 measuring filter (6.25 kHz) at an offset of 9.375 kHz and the EADS and the Nortel (and M/A-COM supported) proposed 5.9 kHz measuring filter at an offset of 9.555 kHz. EADS highlights that the current CFR 90.543 filter when implemented in a practical way extends out of the adjacent channel of interest and into the main 12.5 kHz channel of the desired carrier, being attenuated only 8-10 dB at that point. This means significant energy of the desired main channel signal is being measured as undesired adjacent channel energy, corrupting the

measurement. This is surely not what the FCC intended. In the figure EADS shows that, with the EADS, Nortel, and M/A-COM proposed method, the proposed 5.9 kHz filter with 9.555 kHz offset is attenuated a more practical 30 dB at the crossover into the desired 12.5 kHz channel. The final point that EADS highlights in this plot is a typical receiver filter characteristic for a 6.25 kHz CQPSK solution (e.g. Project 25 TIA-102 implementation for 6.25 kHz channels). EADS points out that practical adjacent channel receiver filters will not extend to the edge of the channel and that the adjacent channel receiver filter characteristic also provides significant attenuation to the interfering signal.

In conclusion, this figure explains why EADS, Nortel, and M/A-COM support a slight change in the first ACP offset and the measurement filter bandwidth. This is but one example of how a more spectrally efficient solution such as TDMA could be hampered by the present rules. Maintaining the rules as presently shown in CFR 90.543 will have an effect of limiting advanced and spectrally efficient solutions and thus hamper the Commission's goal of maximum bit rate efficiencies in the future. The change in ACP rules as endorsed by EADS, M/A-COM, and Nortel do not increase adjacent channel interference and will assist the FCC and Public Safety in meeting future 6.25 kHz channel efficiency rules, greatly improving the capacity and economics of utilizing this precious new resource in the 700 MHz band.

3 Conclusion

EADS supports delay of an interoperability requirement for all radios operating in the 700 MHz wideband channels

Along with other commenters, EADS urges deferral of the adoption of SAM as a wideband data interoperability standard for all 700 MHz radios, until the following criteria can be met:

- Availability of conformance documentation allowing implementation of interoperability
- Known availability of compatible equipment from multiple vendors.

The Commission should modify the ACP requirements for 6.25 kHz, 12.5 kHz, and 25 kHz channels to ensure spectrally efficient technology deployment is not frustrated in the 700 MHz band

EADS encourages the FCC to adopt the ACP requirements as proposed by EADS, Nortel, and M/A-COM to foster the development and deployment of advanced spectrally efficient solutions (e.g. > 1 bit/Hz) in the new 700 MHz bands. This change to the ACP tables will ensure that the Commission can continue its goal of maximizing capacity and performance within existing frequency bands.

EADS agrees with the M/A-COM assertions of a potential 1 dB of coverage improvement should the proposed modifications to ACP be adopted. As M/A-COM has stated, this 1 dB of additional link budget will significantly reduce public safety expenditures. The Commission is well aware that many states intend to utilize the 700 MHz band for statewide networks and thus the importance of high performance, yet economical, network coverage solutions.

Respectfully submitted,

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